

How Mashhad farmers and the Iranian economy could benefit by observing when Mars will be within 30 degrees of the lunar node



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A Rainmaker's Hunch

For farmers in Iran's semi-arid northeast, every drop counts. Mashhad's wheat, barley and saffron fields live and die by seasonal rains — too much floods the roots, too little parches the soil. But what if the sky's rhythms aren't random?

Our latest data dive suggests that **Mars' alignment with the lunar nodes** — when the red planet comes within 30° of the Moon's orbital intersection points — might *slightly* tilt the odds toward wetter months.

A one-tailed Z-test on Mashhad's rainfall data (2009–2023) yielded a **p-value of 0.04** hinting that above-average rainfall months are **about 12% more likely** during these alignments. It's not astrology; it's applied probability with a cosmic twist — and a possible planning edge for farmers.



Why Mashhad, and Why Mars?

Mashhad sits where climate volatility meets human ingenuity. Annual rainfall averages only **~234 mm**, most of it clustered in spring. That variability challenges growers trying to predict irrigation needs.

Meanwhile, the **lunar nodes** — those invisible points where the Moon’s orbit crosses the Sun’s path — mark the rhythm of eclipses. When **Mars**, the “warrior planet,” passes close to these nodes (every few months), astrologers have long associated it with tension and release. Our question: could that tension manifest meteorologically?

The hypothesis was simple but bold:

“Do Mars–lunar node alignments coincide with more frequent above-average rainfall months in Mashhad?”



The Data: Grounded and Updated

We used updated monthly rainfall totals for **January 2009–December 2023** (180 months), drawn from [World Weather Online](#), cleaned to match long-term baselines (Weather Atlas, IRIMO).

Monthly averages (mm):

Month	Average Rainfall (mm)
January	17.0
February	42.0
March	53.0
April	46.0
May	28.0
June	1.7
July	0.3
August	0.4
September	0.6
October	10.4
November	18.7
December	16.2

Mars–lunar node windows (2009–2023):

#	Start Date	End Date
-:	-----	-----
1	Jan 08, 2009	Mar 24, 2009
2	Aug 24, 2009	May 02, 2010
3	Nov 02, 2010	Jan 18, 2011
4	Jun 11, 2011	Sept 01, 2011
5	Aug 24, 2012	Nov 12, 2012
6	Apr 03, 2013	Jun 22, 2013
7	Dec 19, 2013	Aug 28, 2014
8	Jan 27, 2015	Apr 12, 2015
9	Sept 27, 2015	Dec 26, 2015
10	Nov 21, 2016	Feb 01, 2017
11	Jul 11, 2017	Oct 10, 2017
12	Apr 08, 2018	Nov 14, 2018
13	May 01, 2019	Jul 29, 2019
14	Jan 15, 2020	Apr 03, 2020
15	Feb 09, 2021	May 13, 2021
16	Nov 04, 2021	Jan 22, 2022
17	Jun 22, 2022	Sept 19, 2022
18	Dec 26, 2022	Jan 24, 2023
19	Aug 24, 2023	Nov 15, 2023

A “full overlap” rule marked any month touched by these windows as *Within Alignment*.

That gave us:

- 84 “Within” months
- 96 “Not Within” months

A month was labeled *above average* if its rainfall exceeded the monthly mean.

Results:

- 33/84 (39.3%) “Within” months were wetter than average
- 26/96 (27.1%) “Not Within” months were wetter than average



The One-Tailed Test — Stats That Speak

We ran a Z-test for two independent proportions, ideal for large samples with binary outcomes (wet vs. not).

Parameter	Value
-----	-----
p_1 (Within)	0.393
p_2 (Not)	0.271
Difference	0.122
Standard Error	0.070
Z	1.744
One-tailed p-value	**0.0406**

That means, at a 5% significance level, we can **reject the null hypothesis**: there's evidence that above-average months occur more often during Mars–node alignment.

The two-tailed p (0.0812) would've been “borderline,” but our question was directional — “more rain,” not “any difference.”



When Iranian Farmers Could Have Benefited

Looking back at specific “Within” months reveals how this cosmic cue might've helped farmers prepare — saving water, boosting yields, or averting damage. (*see chart at end of article for reference*)



1. March 2020 – 92 mm (Avg 53 mm, +39 mm)

Alignment: Jan–Apr 2020

This wet March coincided with widespread Iranian floods. For Mashhad's wheat and barley growers, that rainfall meant natural irrigation. Farmers anticipating a wetter alignment could've **reduced pumping costs** or **delayed planting** to avoid saturation.

2. October 2018 – 64 mm (Avg 10.4 mm, +53.6 mm)

Alignment: Apr–Nov 2018

A sixfold spike in rain during a normally dry month replenished soil moisture just before saffron harvest. If foreseen, farmers could've optimized timing or saved irrigation costs — a rare gift in Iran's water-strained fields.

3. January 2020 – 50 mm (Avg 17 mm, +33 mm)

Alignment: Jan–Apr 2020

Unusually wet January rainfall recharged groundwater before the growing season. Farmers with foresight could've **adjusted fertilizer timing** or relied less on wells, critical in drought years.

4. February 2017 – 72 mm (Avg 42 mm, +30 mm)

Alignment: Nov 2016–Feb 2017

Extra winter rain nourished overwinter crops without floods. Awareness of the alignment might've prompted **reduced irrigation rounds**, saving scarce water amid Iran's persistent droughts.

5. March 2014 – 71 mm (Avg 53 mm, +18 mm)

Alignment: Dec 2013–Aug 2014

A gentle but above-average rain ideal for early planting. Farmers using this cosmic pattern might've **expanded acreage** safely, capitalizing on moisture-rich soil before summer dry spell.

What It Means — Cosmic Nudge or Coincidence?

A 12% higher frequency of wetter months is a whisper worth hearing.

It could mean:

- Mars–node periods **align** with other climatic cycles (solar activity, ENSO effect)
- The signal reflects **seasonal harmonics** — e.g., alignments clustering in wetter parts of the year.
- Or maybe... the ancients were onto something.

Either way, it's a **statistically testable pattern** — and that's rare in the overlap between astronomy and agriculture.

Takeaway for Farmers

This isn't a forecast, but a **probabilistic edge**. During Mars–lunar node alignments, Mashhad farmers might:

- Expect a **~1 in 3 chance** of a wetter month.
- **Adjust sowing or irrigation** accordingly.
- Pair this with IRIMO's local forecasts for best results.

As Iran faces intensifying droughts, even a 10% signal could mean the difference between scarcity and security. Here are future Mars-lunar node windows:

- Feb 4, 2026 – Apr 19, 2026
- Sep 27, 2026 – Jun 12, 2027
- Dec 2, 2027 – Feb 12, 2028
- Jul 11, 2028 – Oct 5, 2028
- Sep 23, 2029 – Dec 9, 2029
- May 3, 2030 – Jul 24, 2030
- Jan 24, 2031 – Sep 28, 2031
- Feb 24, 2032 – May 13, 2032

- Oct 30, 2032 – Jan 30, 2033
- Dec 12, 2033 – Mar 2, 2034
- Aug 17, 2034 – Nov 12, 2034
- May 1, 2035 – Dec 2, 2035



The Road Ahead

We'll continue expanding this research — testing other Iranian cities (e.g., Tabriz, Shiraz) and cross-checking global rainfall datasets. If similar trends hold, this could form the seed of a “**Celestial Climate Index**” — blending astronomy, statistics, and agrometeorology.

Until then, maybe keep one eye on the stars and the other on the soil.

Statistical Summary (Mashhad, 2009–2023):

- 180 total months
- 19 Mars–lunar node alignment windows
- Above-average months: 33/84 (39%) vs. 26/96 (27%)
- $Z = 1.744$, one-tailed $p = 0.0406$

Conclusion: *Slight but significant evidence that above-average rainfall months are more frequent when Mars nears the lunar nodes.*



Monthly Actual Rainfall Totals (mm, 2009–2023) taken from

<https://www.worldweatheronline.com/mashhad-weather-averages/khorasan/ir.asp>

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2009	24.75	41	74	83	16	1	1	0	0.8	0	31	41
2010	17	43	60	27	36	1	0	0	2.9	0.9	7.6	3.3
2011	10.4	66	24	4.6	47	3	0	0	0.6	26	45	16
2012	46	42	24	37	14	2	0	0	0	22	39	43
2013	3	43	53	36	12	1	0	0	0	7	9	15
2014	6	3	71	29	20	0.3	0.2	0	0	4.6	25	11
2015	20	54	66	12	32	0	0	0	0.8	13	23	23
2016	13	22	47	101	23	4.5	0.4	0	1	0	10	10
2017	25	72	56	21	3	0	2	0	0	1	2	1
2018	4	47	40	23	52	2.2	0	0	0	64	15	5.9
2019	14	92	57	139	42	4	0	0	0	0	18	12
2020	50	42	92	119	12	0	0	0	0	0	23	31
2021	4	1	69	17	27	0	0	0	0	0	13	2.2
2022	30	55	19	23	53	1	0	0	0	8	15	8
2023	3	12	43	4	9	0	0	6	0	3	6	8

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